V. Observations of the Transit of *Mercury* of May 8, 1845, and of the Lunar Eclipse of May 21, 1845, made at Port Stephen, New South Wales. By Captain P. P. King, R.N. Communicated by Captain Beaufort, R.N.

Transit of Mercury, May 8.

The weather was favourable.

	h	m	s	
Last internal contact of limbs (observation good) at	20	59	13·6	⎫ Mean
Bisection of planet by sun's limb........................	21	0	50·6	⎬ Solar
Last external contact of limbs (doubtful)	21	2	15·2	⎭ Time.

Eclipse of the Moon, May 21.

The weather was generally unfavourable.

	h	m	s	
First total immersion at	13	39	59·17	⎫ Mean Solar
Last.......................	14	25	20·47	⎭ Time.

Assuming the longitude of the Paramatta Observatory to be $10^h 4^m 6^s\cdot2$ East, the author finds, by seventeen chronometric differences, the longitude of his residence, where the above observations were made, to be $10^h 8^m 7^s$ East, which he thinks to be considerably to the westward of the truth. The latitude of his residence is (approximately) $32° 40' 15''\cdot8$.

VI. The following communications respecting the Great comet of 1844–5 (Wilmot's).

1. Observations made at Auckland, New Zealand. By C. W. Haile, Esq. Communicated by the Astronomer Royal.

The comet was first seen on December 20, 1844. From the 1st to the 6th of January, 1845, a stellar point was visible at the head, equivalent to a star of the fifth or sixth magnitude. Length of train from 7° to 8°.

On the 9th of January, the length of train was about 6°, and a stellar nucleus was still visible.

2. Observations made at Port Stephen, New South Wales. By Captain P. P. King, R.N.

The observations were made with an altitude and azimuth instrument which formerly belonged to the late Captain Basil Hall. This instrument was placed in a window which commanded a view of the comet, and the instability of the level vitiates, in some degree, the observations of altitude, which were, on that account, probably not observed within a minute of space. The comet also would not bear any illumination of the wires which affects the accuracy of the transits.

On the 27th of December the train was about 10° in length. The observations are accompanied by a map of the comet's progress amongst the stars.

The following are the observed places :—

Day.	Port Stephen Mean Time.	Observed Right Ascension of Comet.	Observed South Declination of Comet.
	h m s	h m s	° ′ ″
1844. Dec. 27	8 31 34	20 11 41·2	40 44 41
1845. Jan. 3	9 8 15	21 38 37·2	44 35 24
6	9 43 29	22 16 5·1	44 42 7
7	8 26 41	22 29 4·2	44 38 58
8	9 42 17	22 41 26·0	44 30 58
9	8 59 47	22 53 24	44 14 28
11	10 29 48	23 17 21	43 25 49
12	9 56 50	23 23 10	42 33 6
13	9 3 45	23 38 8·6	42 23 24
16	11 1 22	0 7 42·6	40 11 28
17	9 59 28	0 17 54·9	39 42 40
20	10 43 37	1 47 9·2	29 12 4

3. Observations made at Wellington, New Zealand, by R. Sheppard, Esq. Communicated by Sir J. F. W. Herschel, Bart.

The comet was first seen on December 22, 1844. On December 26, the length of the tail was from 3° to 4°. On January 1, the tail was fan-shaped and not less than 10° in length, the width at the extremity being about 1° 30′; the nucleus was equal in brilliancy to a star of the 2·3 magnitude. Some observations of distance from neighbouring stars are given.

4. Observations made at the Madras Observatory. By T. G. Taylor, Esq.

The observations were made with a 5-feet equatoreal, of which the circles are small, and read with a single vernier, and the individual results are probably not correct to one minute of space. They extend from 1845, January 5, to March 11 ; but, those from January 5 to 17 having been already published in No. 14 of Vol. VI. of the " Monthly Notices," in a communication from Mr. Waterston, they are omitted here. [The North polar distance results are evidently but rude approximations. SEC.]

1845.	Madras Mean Time.	Right Ascension.	North Polar Distance.	1845.	Madras Mean Time.	Right Ascension.	North Polar Distance.
	h m s	h m s	° ' "		h m s	h m s	° ' "
Jan. 18	6 40 47	0 27 3	128 56 38	Feb. 14	7 3 25	2 47 14	108 53 56
19	6 43 27	35 24	128 8 56	15	7 7 11	50 18	108 21 56
21	7 17 20	51 12	126 30 56	16	6 57 23	53 7	107 45 56
22	6 56 17	58 50	125 46 43	17	7 6 52	56 10	107 12 56
23	6 40 36	1 5 54	124 53 44	18	7 3 9	59 5	106 36 56
24	6 40 49	12 28	124 2 44	19	7 6 11	3 1 56	106 5 0
25	7 12 16	18 55	123 9 44	20	7 0 1	4 29	105 34 56
26	6 46 5	25 2	122 22 44	21	7 1 8	7 18	105 2 30
27	6 59 42	30 57	121 33 43	23	7 8 40	12 15	104 7 56
28	7 15 38	36 51	120 46 22	24	7 6 35	14 44	103 38 56
29	6 58 1	42 10	119 58 31	25	7 22 37	17 23	103 12 30
30	6 50 47	47 21	119 9 55	26	7 9 39	19 37	102 44 4
31	7 3 3	52 18	118 21 55	27	7 16 4	22 3	102 19 4
Feb. 1	6 53 43	57 16	117 34 55	28	7 11 57	24 19	101 53 4
3	6 57 46	2 6 21	116 2 55	Mar. 1	7 11 55	26 44	101 27 4
4	6 56 22	10 53	115 26 56	2	7 13 6	28 49	101 1 4
5	6 55 41	15 13	114 44 56	3	7 7 47	31 3	100 37 4
6	6 53 9	19 1	114 1 56	4	7 10 23	33 7	100 14 4
7	7 0 19	23 4	113 21 56	5	7 26 9	35 24	99 55 4
8	6 55 26	26 51	112 39 56	6	7 11 27	37 23	99 29 4
9	6 54 1	30 28	111 59 26	7	7 20 8	39 7	99 5 4
10	6 59 26	33 52	111 24 26	8	7 43 8	41 47	98 46 4
11	7 2 6	37 21	110 47 56	9	7 23 13	43 27	98 25 4
12	7 1 44	40 48	110 10 56	10	7 32 15	45 43	98 2 4
13	6 57 4	44 2	109 30 56	11	7 3 15	47 29	97 43 4

VII. Observations of Colla's Comet.

1. Observations made at Padua by Professor Santini, extracted from a communication to G. B. Airy, Esq. dated 1845, July 23.

" I send to you a few observations which I have been able to make of the comet recently discovered by Professor Colla, at Parma, on the 2d of June, which was rendered interesting by its brightness, and which I was able on this account to observe with the small equatoreal instrument belonging to this Observatory. From the observations of June 14, 20, and 27 I have deduced (from a simple first approximation, using the method of Olbers,) the following para-